Open Solutions to Distributed Control in Ground Tracking Stations

by
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Abstract

7 he advent of high speed local area networks has made it possible to interconnect small, powerful computers to function together as a single large computer. Today, distributed computer systems are the new paradigm for large scale computing systems. Ilowever, the local area network is only one part of the solution. The services and protocols required by the application programmer to link individual elements of a large scale system together are as indispensable as the local area network. And the selection of services and protocols that do not match system requirements will limit the capabilities, performance and expansion of the system. Proprietary solutions are available but are usually limited to a select set of equipment, However, there are two solutions based on "open" standards. 1 he question that must be answered is "which one is the best one for my job?"

7 his paper examines a model for Deep Space Network (DSN) tracking stations and their requirements for interprocessor communications in the next century. T he model and requirements are matched with the model and services provided by the Open Software Foundation's Distributed Computing E nvironmerrt (OSF/DCE) and the by the International Standards Organization's Manufacturing Message Specification (ISO/MMS). Several key services are examined in detail to determine which services and protocols most closely match the requirements for the tracking station environment. The study reveals that the protocols are tailored to the problem domains for which they were originally designed. Further, the study reveals that the process control model is the closest match to the tracking station model. Finally, the approaches taken by two other groups are discussed providing additional insight to the problems of distributed computing systems for space tracking stations.

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